



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,750	03/15/2001	Huy Thanh Vo	303.723US1	4340

21186 7590 12/10/2003

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

MAI, SON LUU

ART UNIT	PAPER NUMBER
----------	--------------

2818

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,750	VO, HUY THANH	
	Examiner	Art Unit	
	Son L. Mai	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-20-03 has been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the newly cited limitation "the strapping line bypasses a portion in a middle region between a first and second end of the single wordline" as in claims 1, 8, 15, 26, must be shown or the feature(s) canceled from the claim(s). In addition, the limitation "the strapping lines bypass a plurality of separate portions of a single wordline" as in claims 5, 19, 30, 37, 45 and 49, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 8-14, 15-18, 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Cowles (U.S. Patent 5,940,315).

Regarding claim 1, Cowles discloses a memory array (figure 2A), comprising: a number of memory cells (not shown) having a first source/drain region and a second source/drain region and a gate region; a number of source lines (not shown) coupled to the first source/drain region of at least one memory cell; a number of bit lines (not shown) coupled to the second source/drain region of at least one a number of wordlines (30-33) coupled to the gate region of at least one memory cell; a strapping line (112) of lower resistance than the wordlines coupled to a single wordline wherein the strapping line bypasses a portion in a middle region between a first and second end of the single wordline, and wherein the strapping line is spaced apart from adjacent conductive structures by a distance greater than a wordline pitch (figure 2B shows that distance between strapping lines 112 and 113 is greater than a wordline pitch between wordlines 31 and 32); and at least two channels (at node 150 in figure 2A) connecting the strapping line to a first and second end of the portion of the single wordline.

Regarding claim 2, Cowles also teaches that the strapping line comprises metal (column 4, first paragraph).

Regarding claim 3, Cowles also teaches the strapping line metal comprises a refractory metal (column 4, first paragraph).

Regarding claim 4, Cowles teaches that the portion of the wordline bypassed by the strapping line comprises a first half of the memory cells coupled to the wordline (two middle memory arrays in figure 2A are considered as a first half of the memory cells).

Regarding claims 8-14, 15-18, 26-29, since the claims recite similar limitations as in claims 1-4, they are rejected on the same ground.

5. Claims 5-7, 19-25, 30-36, 37-41, 45-48, and 49-54 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,841,688 issued to Sukegawa et al. (hereinafter referred to as "Sukegawa").

Regarding claim 5, Sukegawa discloses in figures 5A-5C and related text, a memory array, comprising: a number of memory cells (not shown) having a first source/drain region and a second source/drain region and a gate region; a number of source lines (not shown) coupled to the first source/drain region of at least one memory cell; a number of bit lines (not shown) coupled to the second source/drain region of at least one memory cell; a number of wordlines (372, 374 in figures 5A, 5B and 5C) coupled to the gate region of at least one memory cell; a plurality of separate strapping lines (500, 508, 502,...) of lower resistance than the wordlines coupled to at least one (wordline 536) of the number of wordlines wherein the strapping lines bypass a plurality of separate portions (536, 538, 540,...) of a single wordline; and a plurality of channels (528, 530) connecting the plurality of strapping layers to the wordline.

Regarding claim 6, Sukegawa teaches that the plurality of strapping lines comprises metal (column 4, lines 33-52).

Regarding claim 7, Sukegawa further teaches the strapping line metal comprises a refractory metal (column 4, lines 33-52).

Regarding claims 19-25, 30-36, 37-41, 45-48 and 49-54, since the claims recite similar limitations as in claims 5-7, they are rejected on the same ground.

6. Claims 42-44 are rejected under 35 U.S.C. 102(b) as being anticipate by Cowles (U.S. Patent 5,940,315).

Regarding claim 42, Cowles teaches a method of reducing a wordline RC time constant in a memory bank comprising: activating a plurality of selected coupled wordlines (30-33 in figure 2A) in a plurality of memory arrays (20-23 in figure 2A), comprising: activating a first wordline (30) in a first memory array (20); and activating a second wordline (30) in a second memory array (21), wherein a signal used for activating the second wordline bypasses the first wordline through a strapping device (110) of lower resistance than the first wordline, wherein the strapping line is spaced apart from adjacent conductive structures by a distance greater than a wordline pitch (figure 2B shows that distance between strapping lines 112 and 113 is greater than a wordline pitch between wordlines 31 and 32), wherein the strapping device is connected to the coupled wordlines by at least two channels (at node 150 in figure 2A); activating a selected bitline (for read/write) in one of the plurality of memory arrays associated with a selected memory cell; discharging the selected memory cell through a selected

transistor (not shown, but understood as an access transistor as transistor 430 in figure 3 of U.S. Patent 5,841,688), the selected transistor being activated by both the plurality of selected coupled wordlines and the selected bitline; and sensing the presence or absence of a charge from the selected memory cell through the use of a sense amplifier (not shown, but inherent as a reading step).

Regarding claim 43, Cowles also teaches activating a second wordline in a second memory array comprises: sending a signal through a first channel to a metal strapping line (110 in figure 2A); sending the signal through the metal strapping line; and sending the signal through a second channel to the second wordline (30).

Regarding claim 44, Cowles also teaches sending the signal through the metal strapping line comprises sending the signal through a refractory metal strapping line (column 4, first paragraph).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son L. Mai whose telephone number is 305-3497. The examiner can normally be reached on 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 308-4910. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Application/Control Number: 09/808,750
Art Unit: 2818

Page 7

11-25-03



Son L. Mai
Primary Examiner
Art Unit 2818